

Claims

[c1] What is claimed is:

1. A method of managing the power consumption of a web browsing device when accessing a web page, the web browsing device including a CPU having a plurality of frequency or voltage settings, the method comprising:

- (a) providing a prediction table listing predicted frequency or voltage settings of the CPU for a plurality of web pages;
- (b) if the address of the web page is listed in the prediction table, setting the frequency or voltage of the CPU to the predicted frequency or voltage setting of the CPU for the web page listed in the prediction table, otherwise setting the frequency or voltage of the CPU to a default value; and
- (c) processing the web page with the CPU set to the predicted frequency or voltage setting.

[c2] 2. The method of claim 1, further comprising storing the original frequency or voltage setting of the CPU, and after processing the web page with the CPU set to the predicted frequency or voltage setting, setting the frequency or voltage of the CPU to the original frequency or voltage

setting.

- [c3] 3. The method of claim 1, further comprising:
 - (d) tracking the CPU workload during the processing of the web page;
 - (e) calculating an optimal frequency or voltage setting for the CPU based on the CPU workload during the processing of the web page; and
 - (f) updating the prediction table to reflect the optimal frequency or voltage setting for the web page.
- [c4] 4. The method of claim 3, wherein tracking the CPU workload during the processing of the web page comprises counting the CPU instructions from the start of the web page processing to the end of the web page processing.
- [c5] 5. The method of claim 3, wherein calculating the optimal frequency or voltage setting for the CPU comprises calculating the lowest frequency or voltage setting for the CPU that still allows the CPU to fully process the web page in a predetermined time period.
- [c6] 6. The method of claim 3, wherein when updating the prediction table to reflect the optimal frequency or voltage setting of the CPU for the web page, the method comprises taking into account the predicted frequency or

voltage setting of CPU listed in the predication table, wherein the predicted frequency or voltage setting takes into account the history of frequency or voltage settings for the web page and is combined with the optimal frequency or voltage setting using a weighting formula.

- [c7] 7.The method of claim 1, wherein setting the frequency or voltage setting of the CPU involves changing the CPU core voltage and frequency.
- [c8] 8.The method of claim 1, wherein the web browsing device is a portable device and the web page contains hyper text markup language (HTML)content, digital image data, extensible markup language (XML) content, portable document format (PDF) content, or a video bit-stream capable of being directly processed by a web browser of the web-browsing device.
- [c9] 9.A web browsing device comprising:
 - a CPU having a plurality of frequency or voltage settings;
 - a storage device storing a prediction table listing predicted frequency or voltage settings for a plurality of web pages; and
 - a power manager for setting the frequency or voltage setting of the CPU when accessing a web page, wherein if the address of the web page is listed in the prediction table, the power manager sets the frequency or voltage

of the CPU to the predicted frequency or voltage setting for the web page listed in the prediction table, and if the address of the web page is not listed in the prediction table, the power manager sets the frequency or voltage of the CPU to a default value.

- [c10] 10. The web browsing device of claim 9, wherein the power manager first stores the original frequency or voltage setting of the CPU, and after the CPU processes the web page with the CPU set to the predicted frequency or voltage setting, the power manager sets the frequency or voltage setting of the CPU to the original frequency or voltage setting.
- [c11] 11. The web browsing device of claim 9, wherein the power manager further tracks the CPU workload during the processing of the web page, calculates an optimal frequency or voltage setting for the CPU based on the CPU workload during the processing of the web page, and updates the prediction table to reflect the optimal frequency or voltage setting of the CPU for the web page.
- [c12] 12. The web browsing device of claim 11, wherein when tracking the CPU workload during the processing of the web page, the power manager counts the CPU instructions from the start of the web page processing to the end of the web page processing.

- [c13] 13. The web browsing device of claim 11, wherein when calculating an optimal frequency or voltage setting for the CPU, the power manager calculates the lowest frequency or voltage setting for the CPU that still allows the CPU to fully process the web page in a predetermined time period.
- [c14] 14. The web browsing device of claim 11, wherein when updating the predication table to reflect the optimal frequency or voltage setting for the web page, the power manager takes into account the predicted frequency or voltage setting listed in the predication table, wherein the predicted frequency or voltage setting takes into account the history of frequency or voltage settings for the web page and is combined with the optimal frequency or voltage setting using a weighting formula.
- [c15] 15. The web browsing device of claim 9, wherein the plurality of frequency or voltage settings of the CPU comprises a plurality of CPU core voltage and frequency settings.
- [c16] 16. The web browsing device of claim 9, wherein the web browsing device is a portable device and the web page contains hyper text markup language (HTML) content, extensible markup language (XML) content, digital image

data, portable document format (PDF) content, or a video bitstream capable of being directly processed by a web browser of the web browsing device.